

**IN THE CLAIMS:**

- 1 1. (Original) In an intermediate node of a data network that comprises one or more vir-  
2 tual local area networks (VLANs), the intermediate node containing a forwarding data-  
3 base comprising one or more forwarding database entries, a method for controlling flood-  
4 ing of packets on a VLAN comprising the steps of:  
5       establishing a limit that indicates a number of forwarding database entries that  
6       may be associated with the VLAN;  
7       determining if a number of forwarding database entries associated with the VLAN  
8       matches the limit established for the VLAN; and  
9       if so, performing an action for controlling the flooding of packets on the VLAN.
  
- 1 2. (Previously Presented) In an intermediate node of a data network, the data network  
2 having one or more virtual local area networks (VLANs), the intermediate node contain-  
3 ing a forwarding database having one or more forwarding database entries and a method  
4 for controlling flooding of packets on a VLAN comprising the steps of:  
5       referencing a media access control (MAC) limit database comprising one or more  
6       MAC limit database entries wherein each entry is associated with a VLAN and contains a  
7       MAC limit that indicates a number of forwarding database entries which may be associ-  
8       ated with the VLAN, and a MAC count that indicates a number of forwarding database  
9       entries associated with the VLAN;

10           using the MAC limit database to determine if a MAC count associated with the  
11   VLAN matches the MAC limit associated with the VLAN; and  
12           if so, performing an action for controlling the flooding of packets on the VLAN.

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1   3. (Previously Presented) The method of claim 2, the step of using the MAC limit data-  
2   base further comprising:

3           locating a MAC limit database entry associated with the VLAN; and  
4           comparing the MAC count of the MAC limit database entry with the MAC limit  
5   of the MAC limit database entry to determine if the number of forwarding database en-  
6   tries associated with the VLAN matches the limit established for the VLAN.

1   4. (Previously Presented) The method of claim 2, the step of using the MAC limit data-  
2   base further comprising:

3           locating a MAC limit database entry associated with the VLAN;  
4           comparing the MAC count of the MAC limit database entry with the MAC limit  
5   of the MAC limit database entry to determine if the MAC count matches the MAC limit;  
6   and  
7           if not, updating the MAC count.

1   5. (Previously Presented) The method of claim 1, further comprising:  
2           logging a message to a log accessible to the intermediate node.

1   6. (Previously Presented) The method of claim 1, further comprising:  
2           disabling flooding for the VLAN.

1   7. (Previously Presented) The method as defined in of claim 1, further comprising:  
2           disabling forwarding packets for the VLAN.

1 8. (Previously Presented) The method of claim 1, further comprising:  
2 disabling learning for the VLAN.

1 9. (Previously Presented) In an intermediate node of a data network, the data network  
2 having one or more virtual local area networks (VLANs), the intermediate node contain-  
3 ing a forwarding database having one or more forwarding database entries, a method for  
4 controlling flooding of packets on a VLAN comprising the steps of:  
5 establishing a limit that indicates a number of forwarding database entries that  
6 may be associated with the VLAN;  
7 determining if a number of forwarding database entries associated with the VLAN  
8 matches the limit established for the VLAN;  
9 if so, shutting down the VLAN;  
10 acquiring a packet associated with the VLAN;  
11 determining if the VLAN is shut down; and  
12 if so, dropping the packet.

1 10. (Previously Presented) The method of claim 1, further comprising:  
2 acquiring a packet wherein the packet is associated with the VLAN;  
3 determining if the forwarding database contains an entry which contains a MAC  
4 address that matches a source address contained in the packet;  
5 if not, determining if learning is disabled for the VLAN; and  
6 if not, generating a forwarding database entry that contains the source address of  
7 the packet.

1 11. (Previously Presented) The method of claim 1, further comprising:

2           acquiring a packet associated with the VLAN;  
3           determining if the forwarding database contains an entry which contains a MAC  
4 address that matches a destination address contained in the packet;  
5           if not, determining if flooding is enabled for the VLAN; and  
6           if so, flooding the packet.

1   12. (Original) An intermediate node coupled to a data network containing one or more  
2 VLANs, the intermediate node comprising:  
3           a forwarding database containing one or more entries wherein each entry is asso-  
4 ciated with a node accessible to the intermediate node and wherein each entry is associ-  
5 ated with a virtual local area network (VLAN); and  
6           a processor configured to, for each VLAN, (i) establish a limit for the VLAN  
7 wherein the limit indicates a number of forwarding database entries that may be associ-  
8 ated with the VLAN, (ii) determine if a number of entries in the forwarding database as-  
9 sociated with the VLAN matches the limit established for the VLAN, and (iii) if so, per-  
10 form an action for controlling the flooding of packets on the VLAN.

1   13. (Previously Presented) An intermediate node coupled to a data network containing  
2 one or more VLANs, the intermediate node comprising:  
3           a forwarding database containing one or more entries wherein each entry is asso-  
4 ciated with a node accessible to the intermediate node and wherein each entry is associ-  
5 ated with a virtual local area network (VLAN);  
6           a media access control (MAC) limit database having one or more MAC limit da-  
7 tabase entries wherein each entry is associated with a VLAN and contains a MAC limit  
8 that indicates a number of forwarding database entries which may be associated with the  
9 VLAN and a MAC count that indicates a number of entries in the forwarding database  
10 associated with the VLAN; and  
11           a processor configured to, for each VLAN, (i) read a MAC limit associated with  
12 the VLAN from the MAC limit database, (ii) read a MAC count associated with the

13 VLAN from the MAC limit database, (iii) determine if the MAC count associated with  
14 the VLAN matches the MAC limit associated with the VLAN, and (iv) if so, perform an  
15 action for controlling the flooding of packets on the VLAN.

1 14. (Previously Presented) The intermediate node of claim 13 comprising:  
2 the processor further configured to, for each entry in the forwarding database,  
3 compare the MAC count with the MAC limit of the VLAN associated with the forward-  
4 ing database entry to determine if the MAC count matches the MAC limit.

1 15. (Previously Presented) The intermediate node of claim 13 comprising:  
2 the processor further configured to update the MAC count if the MAC count does  
3 not match the MAC limit.

1 16. (Previously Presented) The intermediate node of claim 12 further comprising:  
2 the processor configured to log a message to a log accessible to the intermediate  
3 node.

1 17. (Previously Presented) The intermediate node of claim 12 further comprising:  
2 the processor configured to disable flooding for the VLAN.

1 18. (Previously Presented) The intermediate node of claim 12 further comprising:  
2 the processor configured to disable forwarding packets for the VLAN.

1 19. (Previously Presented) The intermediate node of claim 12 further comprising:  
2 the processor configured to disable learning for the VLAN.

1 20. (Previously Presented) A system comprising:  
2 a forwarding database comprising one or more forwarding database entries asso-  
3 ciated with a VLAN;

4 means for establishing a limit wherein the limit indicates a number of entries  
5 which may be contained in the forwarding database associated with the VLAN;  
6 means for determining if a number of entries in the forwarding database associ-  
7 ated with the VLAN matches the limit established for the VLAN; and  
8 means for performing an action for controlling the flooding of packets on the  
9 VLAN, if the number of entries in the forwarding database associated with the VLAN  
10 matches the limit established for the VLAN.

1 21. (Previously Presented) A system comprising:

2 means for referencing a media access control (MAC) limit database comprising  
3 one or more MAC limit database entries wherein each entry is associated with a VLAN  
4 and contains a MAC limit that indicates a number of forwarding database entries which  
5 may be associated with the VLAN and a MAC count that indicates a number of entries in  
6 the forwarding database associated with the VLAN;  
7 means for using the MAC limit database to determine if a MAC count associated  
8 with the VLAN matches the MAC limit associated with the VLAN; and  
9 means for performing an action for controlling the flooding of packets on the  
10 VLAN, if the MAC count associated with the VLAN matches the MAC limit associated  
11 with the VLAN.

1 22. (Previously Presented) A system comprising:

2 means for establishing a limit wherein the limit indicates a number of entries  
3 which may be contained in the forwarding database associated with the VLAN;  
4 means for determining if a number of entries in the forwarding database associ-  
5 ated with the VLAN matches the limit established for the VLAN;  
6 means for performing an action for controlling the flooding of packets on the  
7 VLAN, if the number of entries in the forwarding database associated with the VLAN  
8 matches the limit established for the VLAN;

9 means for accessing an entry in the forwarding database associated with a VLAN;  
10 means for comparing a MAC count with a MAC limit associated with the VLAN  
11 to determine if the MAC count matches the MAC limit; and  
12 means for updating the MAC count, if the MAC count does not match the MAC  
13 limit.

1 23. (Previously Presented) A computer readable medium containing computer executable  
2 instructions for controlling the flooding of packets on a VLAN, the computer readable  
3 medium containing computer executable instructions for:

4 establishing a limit of a number of forwarding database entries which may be as-  
5 sociated with the VLAN;

6 determining if a number of entries in the forwarding database associated with the  
7 VLAN matches the limit established for the VLAN; and

8 if so, performing an action for controlling the flooding of packets on the VLAN.

1 24. (Previously Presented) A method for operating an intermediate network node, com-  
2 prising:

3 receiving a packet having a VLAN tag;

4 looking up a MAC destination address of the VLAN packet in a forwarding table;

5 looking up, in response to not finding the MAC destination address in the for-  
6 warding table, a limit of MAC addresses (MAC limit) of the VLAN; and

7 performing an action for controlling flooding of packets on the VLAN in response  
8 to a count of MAC addresses (MAC count) of the VLAN matching the MAC limit for the  
9 VLAN.

1 25. (Previously Presented) The method of claim 24, further comprising:

2 logging a message, as the action for controlling flooding on the VLAN.

1 26. (Previously Presented) The method of claim 24, further comprising:

2 disabling flooding for the VLAN, as the action for controlling flooding on the  
3 VLAN.

1 27. (New) The method of claim 24, further comprising:

2 disabling learning for the VLAN, as the action for controlling flooding on the  
3 VLAN.

1 28. (Previously Presented) The method of claim 24, further comprising:

2 shutting down the VLAN, as the action for controlling flooding on the VLAN.

1 29. (Previously Presented) The method of claim 24, further comprising:

2 in response to receiving a VLAN packet for a shut down VLAN, dropping the  
3 packet.

1 30. (Previously Presented) The method of claim 24, further comprising:

2 in response to receiving a VLAN packet, looking up a MAC source address of the  
3 VLAN packet in the forwarding table;



4 in response to not finding the MAC source address in the forwarding table, deter-  
5 mining if learning is disabled for the VLAN; and  
6 if learning is not disabled for the VLAN, generating a forwarding database entry  
7 for the VLAN.

1 31. (Previously Presented) The method of claim 24, further comprising:

2 in response to not finding the MAC destination in the forwarding table, determin-  
3 ing if flooding is disabled;  
4 if flooding is disabled, dropping the VLAN packet; and  
5 if flooding is not disabled, flooding the VLAN packet out all ports except a re-  
6 ceiving port.

1 32. (Previously Presented) The method of claim 24, further comprising:

2 looking up the MAC limit for the VLAN in a MAC limit database.

1 33. (Previously Presented) The method of claim 24, further comprising:

2 looking up the MAC count for the VLAN in a MAC limit database; and  
3 in response to the MAC count not matching the MAC limit, updating the MAC  
4 count in the MAC limit database.

1 34. (Previously Presented) An intermediate network node coupled to a data network con-  
2 taining one or more VLANs, the intermediate network node comprising:

3 means for receiving a packet having a VLAN tag;

4 means for looking up a MAC destination address of the VLAN packet in a for-  
5 warding table;

6 means for looking up, in response to not finding the MAC destination address in  
7 the forwarding table, a limit of MAC addresses (MAC limit) of the VLAN; and

8 means for performing an action for controlling flooding of packets on the VLAN  
9 in response to a count of MAC addresses (MAC count) of the VLAN matching the MAC  
10 limit for the VLAN.

1 35. (Previously Presented) The intermediate network node of claim 34, further compris-  
2 ing:

3 means for logging a message, as the action for controlling flooding on the VLAN.

1 36. (Previously Presented) The intermediate network node of claim 34, further compris-  
2 ing:

3 means for disabling flooding for the VLAN, as the action for controlling flooding  
4 on the VLAN.

1 37. (Previously Presented) The intermediate network node of claim 34, further compris-  
2 ing:

3 means for disabling learning for the VLAN, as the action for controlling flooding  
4 on the VLAN.

1 38. (Previously Presented) The intermediate network node of claim 34, further compris-  
2 ing:

3 means for shutting down the VLAN, as the action for controlling flooding on the  
4 VLAN.

1 39. (Previously Presented) The intermediate network node of claim 34, further compris-  
2 ing:

3 means for in response to receiving a VLAN packet for a shut down VLAN, drop-  
4 ping the packet.

1 40. (Previously Presented) The intermediate network node of claim 34, further compris-  
2 ing:

3 in response to receiving a VLAN packet, means for looking up a MAC source ad-  
4 dress of the VLAN packet in the forwarding table;

5 in response to not finding the MAC source address in the forwarding table, means  
6 for determining if learning is disabled for the VLAN; and

7 if learning is not disabled for the VLAN, means for generating a forwarding data-  
8 base entry for the VLAN.

1 41. (Previously Presented) The intermediate network node of claim 34, further compris-  
2 ing:

3           in response to not finding the MAC destination in the forwarding table, means for  
4   determining if flooding is disabled;  
5           if flooding is disabled, means for dropping the VLAN packet; and  
6           if flooding is not disabled, means for flooding the VLAN packet out all ports ex-  
7   cept a receiving port.

1   42. (Previously Presented) The intermediate network node of claim 34, further compris-  
2   ing:

3           looking up the MAC limit for the VLAN in a MAC limit database.

1   43. (Previously Presented) The method of claim 34, further comprising:

2           means for looking up the MAC count for the VLAN in a MAC limit database;

3   and

4           in response to the MAC count not matching the MAC limit, means for updating  
5   the MAC count in the MAC limit database.

1   44. (Previously Presented) An intermediate network node coupled to a data network con-  
2   taining one or more VLANs, the intermediate network node comprising:

3           one or more line cards configured to receive VLAN packets;

4           a forwarding database configured to store one or more MAC destination address  
5   associated with one or more VLANs;

6           a media access control (MAC) limit database configured to store one or more  
7   MAC limit database entries, each MAC limit database entry associated with a VLAN and  
8   contains a limit of MAC addresses (MAC limit) for the VLAN and a count of MAC ad-  
9   dresses of the VLAN; and  
10          a processor configured to perform an action for controlling flooding of packets on  
11   a VLAN in response to the MAC count of the VLAN matching the MAC limit for the  
12   VLAN.

1   45. (Previously Presented) The intermediate network node of claim 44, further compris-  
2   ing:

3          the processor configured to log a message, as the action for controlling flooding  
4   on the VLAN.

1   46. (Previously Presented) The intermediate network node of claim 44, further compris-  
2   ing:

3          the processor configured to disable flooding for the VLAN, as the action for con-  
4   trolling flooding on the VLAN.

1   47. (Previously Presented) The intermediate network node of claim 44, further compris-  
2   ing:

3          the processor configured to disable learning for the VLAN, as the action for con-  
4   trolling flooding on the VLAN.

1 48. (Previously Presented) The intermediate network node of claim 44, further compris-  
2 ing:

3 the processor configured to shut down the VLAN, as the action for controlling  
4 flooding on the VLAN.

1 49. (Previously Presented) The intermediate network node of claim 44, further compris-  
2 ing:

3 the processor configured to drop a VLAN packet, in response to receiving the  
4 VLAN packet for a shutdown VLAN.

1 50. (Previously Presented) The intermediate network node of claim 44, further compris-  
2 ing:

3 the processor configured to look up a MAC source address of a VLAN packet in  
4 the forwarding table;

5 the processor configured to determine if learning is disabled for the VLAN, in re-  
6 sponse to not finding the MAC source address of the VLAN in the forwarding table; and

7 the processor configured to generate a forwarding database entry for the VLAN, if  
8 learning is not disabled for the VLAN.

1 51. (Previously Presented) The intermediate network node of claim 44, further compris-  
2 ing:

3           the processor configured to determine if flooding is disabled for a VLAN, in re-  
4    sponse to not finding a MAC destination for a VLAN packet in the forwarding table;  
5           the processor configured to drop the VLAN packet, if flooding is disabled; and  
6           the process configured to flood the VLAN packet out all ports except a receiving  
7    port, if flooding is not disabled.

1    52. (Previously Presented) The intermediate network node of claim 44, further compris-  
2    ing:

3           the processor configured to look up a MAC limit for a VLAN in the MAC limit  
4    database.

1    53. (Previously Presented) The method of claim 44, further comprising:

2           the processor configured to look up a MAC count for a VLAN in the MAC limit  
3    database; and

4           the processor configured to update the MAC count in the MAC limit database, in  
5    response to the MAC count not matching the MAC limit.

1    54. (Previously Presented) A computer readable media, comprising:

2           the computer readable media containing instructions for operating an intermediate  
3    network node for the practice of the method of,

4           receiving a packet having a VLAN tag;

5 looking up a MAC destination address of the VLAN packet in a forwarding table;  
6 looking up, in response to not finding the MAC destination address in the for-  
7 warding table, a limit of MAC addresses (MAC limit) of the VLAN; and  
8 performing an action for controlling flooding of packets on the VLAN in response  
9 to a count of MAC addresses (MAC count) of the VLAN matching the MAC limit for the  
10 VLAN.